CLAIMS

1. A transgenic bird

which is obtained as a G1 transgenic bird or an offspring thereof by: incubating a fertilized avian egg,

a) microinjecting, into the early embryo thereof at a stage except for and after the blastodermic stage just after egg laying, a replication-deficient retroviral vector coding for a desired protein,

b) allowing the egg to hatch out to thereby obtain a G0 transgenic chimeric bird, and

c) mating the G0 transgenic chimeric bird with another G0 transgenic chimeric bird or an offspring thereof or with a wild-type bird.

2. The transgenic bird according to Claim 1

wherein the early embryo is at least 24 hours after the start of incubation.

3. The transgenic bird according to Claim 2

wherein the early embryo is at least 48 hours after the start of incubation.

4. The transgenic bird according to any one of Claims 1 to 3

wherein the desired protein is an antibody.

5. The transgenic bird according to any one of Claims 1 to 4

wherein the bird is a chicken or a quail.

6. A transgenic bird

which is a G2 transgenic bird or an offspring thereof obtained by mating the G1 transgenic bird according to any one of Claims 1 to 5 with a G0 transgenic bird, another G1 transgenic

bird or an offspring thereof, or with a wild-type bird.

7. A method for constructing a G1 transgenic bird which comprises incubating a fertilized avian egg,

a) microinjecting, into the early embryo thereof at a stage except for and after the blastodermic stage just after egg laying, a replication-deficient retroviral vector coding for a desired protein,

b) allowing the egg to hatch out to thereby obtain a G0 transgenic chimeric bird, and

c) mating the G0 transgenic chimeric bird with another G0 transgenic chimeric bird or an offspring thereof or with a wild-type bird.

8. The method for constructing a transgenic bird according to Claim 7 wherein the early embryo is at least 24 hours after the start of incubation.

9. The method for constructing a transgenic bird according to Claim 8 wherein the early embryo is at least 48 hours after the start of incubation.

10. The method for constructing a transgenic bird according to any one of Claims 7 to 9 wherein the desired protein is an antibody.

11. The method for constructing a transgenic bird according to any one of Claims 7 to 10 wherein the bird is a chicken or a quail.

12. The method for constructing a transgenic bird according to any one of Claims 7 to 11 which comprises microinjecting a replication-deficient

retroviral vector having a titer of not lower than 1×10^7 cfu/ml.

13. The method for constructing a transgenic bird according to Claim 12

which comprises microinjecting a replication-deficient retroviral vector having a titer of not lower than 1×10^9 cfu/ml.

14. A method for constructing a transgenic bird

which comprises mating the G1 transgenic bird according to any one of Claims 1 to 5 with a G0 transgenic bird, another G1 transgenic bird or an offspring thereof or with a wild-type bird to construct a G2 transgenic bird or an offspring thereof.

15. A method for producing a protein

which comprises extracting a desired protein from somatic cells, blood or eggs from a transgenic bird constructed by the method according to any one of Claims 7 to 14.

16. A method for sorting out a reproductive lineage transgenic chimeric bird

which comprises collecting sperm samples from transgenic birds according to any one of Claims 1 to 6 and testing them for the gene in the sperm.

17. The method for constructing a transgenic bird according to any one of Claims 7 to 14

wherein the replication-deficient retroviral vector is a vector derived from Moloney murine leukemia virus.

18. The method for constructing a transgenic bird according to any one of Claims 7 to 14

wherein the replication-deficient retroviral vector is VSV-G pseudotyped.

19. The method for constructing a transgenic bird

according to any one of Claims 7 to 14, 17 and 18

wherein the replication-deficient retroviral vector contains a non-retrovirus-derived gene.

20. The method for constructing a transgenic bird according to Claim 19

wherein the non-retrovirus-derived gene is controlled under the chicken β-actin promoter.

21. The method for constructing a transgenic bird according to Claim 19 or 20

wherein the non-retrovirus-derived gene codes an antibody.

22. The method for constructing a transgenic bird according to Claim 21

wherein the antibody is a chimeric antibody.

23. The method for constructing a transgenic bird according to Claim 22

wherein the chimeric antibody is scFv-Fc antibody.

24. The transgenic bird

which is constructed by the method according to any one of Claims 7 to 14 and 17 to 23.

25. An egg laid by the transgenic bird according to Claim 24

which contains not lower than 1 mg/100 g of the desired protein.

26. An egg laid by the transgenic bird according to Claim 24

which contains not lower than 20 mg/100 g of the desired protein.

27. An egg laid by the transgenic bird according to Claim 24

which contains not lower than 100 mg/100 g of the desired protein.

28. A method for sorting out a reproductive lineage transgenic chimeric bird

which comprises incubating a fertilized avian egg, microinjecting, into the early embryo thereof at a stage except for and after the blastodermic stage just after egg laying, a replication-deficient retroviral vector coding for a desired protein and confirming the gene coding for the desired protein in the sperm of the male G0 transgenic bird obtained by hatching.

29. A method for sorting out a transgenic bird

which comprises confirming the expression of the desired protein in the blood of the transgenic bird according to any one of Claims 1 to 6.

30. A method for sorting out a G0 transgenic chimeric bird

which comprises incubating a fertilized avian egg, microinjecting, into the early embryo thereof at a stage except for and after the blastodermic stage just after egg laying, a replication-deficient retroviral vector coding for a desired protein and confirming the expression of the desired protein in the blood of the G0 transgenic bird obtained by hatching.